

**TITLE: INCLINED SUPPORT-DISPLAY ASSEMBLY AND A BRACKET
THEREFORE**

I. BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention generally relates to adjustable shelves for articles of furniture, and more particularly, to an inclined support-display assembly and a bracket therefore adapted for articles of furniture with adjustable shelves.

2. Description of the Prior Art

Articles of furniture using adjustable shelves are very well known and are in common use. The vast majority of furniture stores carry articles of furniture such as cabinets, cupboards, bookcases and the like, wherein several horizontal shelves are anchored to and supported by a pair of vertical, end panels. To this end, each vertical, end panel of the foregoing pair of vertical, end panels (which will be referred to as an end panel hereinafter) is provided with two columns of equally spaced, successive perforations. Each of these columns is disposed in the vicinity of one of the two longitudinal margins of each end panel. A pair of pegs or pins is snugly inserted into two coplanar perforations belonging to the two columns of successive perforations of each end panel. Thus, two pairs of pegs or pins disposed in the same horizontal plane are adapted to engage an undersurface of each one of the several horizontal shelves. In general, the diameter of the perforations and the distance between two consecutive perforations in the two columns of successive perforations of each end panel are standard (5mm and 32mm, respectively). Consequently, the diameter of the pegs or pins is adapted to match and snugly engage the interior of each of the mentioned perforations.

An essential disadvantage of the foregoing arrangement resides in the fact that the shelves, being only horizontally disposed, have a fixed configuration with a limited degree of flexibility. For display arrangements, such as, for example, shoe-holding, there is a need of a support, inclined with respect to a horizontal plane.

The following disclosures relate to various types of supports applicable to shelves: Gates, et al. (U.S. 6,637,707 issued October 28, 2003); Beauvois (EP No. 1,350,964 issued October 08, 2003); Bohnaker (U.S. Pat. 6,607,171 issued July 19, 2003); Aitken, et al. (G.B. No. 2,384,419 issued July 30, 2003); Belardinelli, et al. (WO No. 03059128 issued July 24, 2003); Seeger (EP No. 1,316,272 issued June 04, 2003); Cattoire (U.S. Publ. Appl. No. 2003/0090178 published May, 15, 2003); Lin Chin-Chin (U.S. Pat. No. 6,547,478 issued April 15, 2003); Kempf, et al. (U.S. Pat. No. 6,547,197 issued April 15, 2003); and Oueno (U.S. No. 6,520,463 issued Feb. 18, 2003).

The inventors believe that the cited disclosures taken alone or in combination neither anticipate nor render obvious the present invention. The foregoing citation does not constitute an admission that such disclosures are relevant or material to the claimed subject matter. Rather, the disclosures relate only to the field of the invention and are cited as constituting the closest art of which the inventors are aware.

II. SUMMARY OF THE INVENTION

There is accordingly a need for an inclined support-display assembly and, namely, for a bracket therefore which overcome the limitations of the prior art.

Thus, it is an objective of the present invention to provide an assembly and a bracket therefore which are inexpensive and easy to use.

It is another objective of the present invention to provide an assembly and a bracket therefore in conjunction, especially but not exclusively, with standard furniture using adjustable shelves.

It is still another objective of the present invention to provide an assembly and a bracket therefore, which are intended to be releasably retained in cupboards, cabinets, bookcases and the like.

Based on the foregoing objectives, the inventors developed an assembly and a bracket therefore which they believe have an uncomplicated design, are reliable, functionally practical and visually unobtrusive.

The present invention relates to an inclined support-display assembly installed in an article of furniture having a pair of end panels, oppositely spaced and vertically located. Each one of the pair of end panels is provided with two identical columns of equally spaced perforations extending vertically in proximity of one of the longitudinal margins of each end panel, respectively back or front longitudinal margin. The diameter of each perforation and a distance between two consecutive perforations in each one of the two identical columns of equally spaced perforations are conventionally predetermined. An inclined support-display assembly and bracket therefore comprises front and back support subassemblies. Each one of front or back support subassemblies includes a pair of brackets wherein a tubular elongated element, adapted to be used in combination with the pair of end panels, is inserted. Each one of the pair of brackets incorporates a flat base having rear and front faces and two pins projecting from the rear face, closely to one extremity of the flat base. Both the diameter of each pin and a distance between the two pins are so commensurate with both the diameter of each perforation and a distance between two consecutive perforations that a light-press fit between the former and the latter, when engaged together, occurs. The bracket comprises as well a socket disposed closely to

another extremity of the flat base, so as to correspond to a midway distance between the two pins.

The socket starts from the rear surface and continues past the front face of the flat base. The internal diameter of the socket is commensurate with the external diameter of the tubular elongated element.

The invention relates as well to brackets used in combination with an inclined support-display assembly, respectively with front and back support subassemblies. Each of the latter includes a pair of brackets assembled with a tubular elongated element, adapted to be installed into an enclosure of an article of furniture. The latter is provided with removable shelves and a pair of end panels, oppositely spaced and vertically located. Each one of the pair of end panels is provided with two identical columns of equally spaced perforations. Each one of the two identical columns of equally spaced perforations extends vertically in proximity of one of the longitudinal margins of an end panel, respectively back or front longitudinal margin. The diameter of each perforation and a distance between two consecutive perforations in each one of the two identical columns of equally spaced perforations are conventionally predetermined. The bracket incorporates a flat base having rear and front faces and two pins projecting from the rear face, closely to one extremity of the flat base, both the diameter of each pin and a distance between two pins are so commensurate with both the diameter of each perforation and the distance between two consecutive perforations, that a light-press fit between the former and the latter, when engaged together, occurs. The bracket also incorporates a socket disposed closely to another extremity of the flat base, so as to correspond to a midway distance between the two pins. The socket starts from the rear surface and continues past the front face of the flat base. The

internal diameter of the socket is commensurate with the external diameter of the tubular elongated element.

III. BRIEF DESCRIPTION OF THE DRAWINGS

The subject matter of the invention is particularly pointed out and distinctively claimed in the concluding portion of the specification. The invention, however, both in structure and operation may be better understood by reference to the following description taken in conjunction with the subjoined claims and the accompanying drawings of which:

Figure 1 shows a fragmentary perspective view of an enclosure of an article of furniture, wherein the present invention is assembled;

Figure 2 shows a perspective rear view of a bracket according to the present invention; and

Figure 3 shows a perspective front view of a bracket according to the present invention.

IV. DESCRIPTION OF THE PREFERRED EMBODIMENT

FIGS 1- 3 best illustrate the preferred embodiment of an inclined support-display assembly and a bracket therefore of the present invention designated generally by the numeral 100, in combination with an article of furniture 200 having a pair of end panels 210, oppositely spaced and vertically located and a rear wall (not shown). Each end panel 210 is provided with two identical columns of equally spaced perforations 220 (hereinafter referred as perforations 220), each of the latter extending vertically in proximity of one of the longitudinal margins 230 and 230' (respectively back or front longitudinal margin 230 and 230') of each end panel 210. The diameter of each perforation 220 and the distance between two vertically and consecutively

disposed perforations 220, due to longstanding use within the furniture art, are, conventionally, standard (5mm and 32mm, respectively).

Inclined support-display assembly and bracket therefore 100 comprises a pair of front and back support subassemblies 110. Each one of the pair of front and back support subassemblies 110 comprises a pair of brackets 120 and a tubular elongated element 180 (hereinafter referred as tubular element 180), all adapted to be used in combination with two end panels 210.

Each bracket 120 comprises a flat base 122 having rear and front faces, respectively 124 and 126.

Two pins 128 project from rear face 124, closely to one extremity 129 of flat base 122. The diameter of a pin 128 and a distance between two pins 128 are so commensurate with both the diameter of each perforation 220 and the distance between two consecutive perforations 220, that a light-press fit between the former and the latter occurs. It is evident that the length of each one of said two pins 128 is lesser than a half of a length of each perforation 220.

A through socket 130 (hereinafter referred as socket 130), disposed closely to another extremity 129' of flat base 122, so as to correspond to a midway distance between two pins 128, starts from rear surface 124 and continues past front face 126 of flat base 122. The internal diameter 136 of socket 130 is commensurate with the external diameter 136' of each tubular element 180. Tubular element 180 and socket 130 are adapted to interengage.

A preferable arrangement for inclined support-display assembly and bracket therefore 100 comprises the use of a back support subassembly 110 which consists firstly introducing the ends of tubular element 180 into the pair of brackets 120 and secondly in inserting the latter into end panels 210. Positionally, the pair of brackets 120 is located at the same level, each bracket 120

being inserted into a pair of consecutive perforations 220 of each end panel 210, which perforations 220 are situated close to back longitudinal margin 230.

A front support subassembly 110, structurally identical with back support subassembly 110 is inserted into another pair of consecutive perforations 220, situated close to front longitudinal margin 230' and lower than the pair of consecutive perforations 220 close to back longitudinal margin 230. It can be easily understood that that the concept of this invention is equally applicable to a situation when both tubular elements 180 are situated in the same horizontal plane.

Thus, the pair of front and back support subassemblies 110 can be so placed as to form a support plane (inclined or horizontal). An inclination of a support plane with respect to a horizontal position could vary between 0° and 35°.

Describing now in detail, each pin 128 comprises a shank 138 generally extending from rear surface 124 and ending with a chamfered or rounded head 140.

A smooth radius transition 142 between shank 138 and rear surface 124 is used to reduce stress concentration between the former and the latter and, hence, a fracture of shank 138. Since the smooth radius transition 142 prevents a suitable and full contact between rear surface 124 and an adjacent end panel 210, a first annular recess 144 is provided in rear surface 124, around smooth radius transition 142.

Socket 130, respectively at its entrance, for slidably inserting tubular element 180, has a chamfered or rounded zone 146.

Bracket 120 could be manufactured of any durable material such as plastic injection moulded or the like.

Alternatively, when inclined support-display assembly and bracket therefore 100 is required to bare a heavy load, bracket 120 would be die casted.

As required, a detailed embodiment of the present invention is disclosed herein; however, it is to be understood that the disclosed embodiment is merely exemplary of the invention which may be embodied in various forms. Therefore, specific structural and functional details disclosed herein are not to be interpreted as limiting, but merely as a basis for the claims and as representative basis for teaching one skilled in the art to variously employ the present invention in virtually any appropriately detailed structure.